



OFFICE MEMORANDUM

DATE: September 14, 1998

TO: Region Engineers
Region Associate Delivery Engineers
Region Construction Engineers
Resident/Project Engineers/TSC Managers

FROM: C. Thomas Maki
Chief Operations Officer

Gary D. Taylor
Chief Engineer/Deputy Director
Bureau of Highway Technical Services

SUBJECT: Bureau of Highway Instructional Memorandum 1998-8
Materials Quality Assurance Manual Section A11 (new)
Construction Project Documentation Required for
Minimum Job Control Deviations

The attached document is added to the Materials Quality Assurance Manual as Section A11, Construction Project Documentation Required for Minimum Job Control Deviations. The guidance information in this new section of the manual was developed with input from the Construction and Technology Division, region staff, and FHWA. It is intended to clarify the responsibilities of the resident or project engineer for complete project documentation whenever a decision is made to deviate from any of the department's established procedures, including the standard specifications and all referenced manuals.

Standard procedures are established to provide guidance to project staff and are to be followed whenever possible. However, if based on professional judgement, the engineer determines that it is in the best interest of the department and the state to deviate from these established procedures, it is imperative that the facts supporting the decision are fully documented in the project files.

BOH IM 1998-8
September 14, 1998
Page 2

Additional guidance on this subject can be found in Section A4, Disposition of Material Based on Laboratory Test Results, of the Materials Quality Assurance Manual. A copy of Section A4 is attached here for your information.

C. Thomas Maki
Chief Operation Officer

Gary D. Taylor, Chief Engineer/Deputy Director
Bureau of Highway Technical Services

Attachments

BOHTS:C&T:JAR:dmg

Subject Index: Materials

cc:	Lansing C&T Division Engineers	FHWA, J. Steele
	Lansing C&T Division Technicians	MAPA
	Real Estate Division, M. Frierson	MCPA
	Design Division, P. Miller	MCA
	G. Taylor	MAA
	B. Jay	MRBA
	T. Maki	AUC
	V. Blaxton	OEO, A. Suber
	J. Reincke	
	R. Knapp	
	S. Kulkarni	
	J. Klee	
	P. Rang	
	J. Ruszkowski	

CONSTRUCTION PROJECT DOCUMENTATION REQUIRED
FOR MINIMUM JOB CONTROL DEVIATIONS

1. Scope

1.1 This procedure covers the deviation from minimum job control requirements on Michigan Department of Transportation's (MDOT) administered construction projects. Appropriate documentation shall be created and retained in the specific construction project's records whenever a decision is made to intentionally deviate from any minimum job control requirements of any of MDOT's procedures, publications or specifications.

2. Related Documents

2.1 1996 Michigan Standard Specifications for Construction

2.2 Materials Sampling Guide

2.3 Density Control Handbook

2.4 Construction Manual

3. Procedure

3.1 *MDOT Projects*

3.1.1 Whenever an MDOT Resident or Project Engineer decides to deviate from any minimum job control requirement, identified in any of MDOT's procedures, publications or specifications, appropriate documentation shall be created.

3.1.2 The Engineer shall create and date the documentation immediately upon the decision to deviate from the minimum job control requirement.

3.2 *Local Government Projects*

3.2.1 Whenever a Local Project Engineer decides to deviate from any minimum job control requirement, identified in any of MDOT's procedures, publications or specifications, appropriate documentation shall be created.

3.2.2 The project engineer shall create and date the documentation immediately upon the decision to deviate from the minimum job control requirement and shall obtain concurrence from the appropriate MDOT Engineer, prior to filing the document.

4. Records

4.1 The document shall indicate the specific reasons that the decision is made.

4.2 Appropriate reasons may include applied statistical analysis, specific engineering principals, or other appropriate logic.

4.3 The document shall indicate the date of the recommendation, the name and date that the appropriate individual concurs with the recommendation, the job reference information, and any other extenuating information.

4.4 The documentation used for this operation shall be retained in the specific construction project's records.



OFFICE MEMORANDUM

DATE: January 15, 1998

TO: PROJECT FILE
CS54321-JN12345

SAMPLE MEMO

FROM: Xxxxx Y. ZZZZZZ P.E.
Certified Resident/ Project Engineer

SUBJECT: Job Control Requirement Deviation

The minimum requirements for in place density of aggregate base for this project currently are;
1 test per 150 meters per width of 7.5 meters or less.

The minimum requirement is revised, for this project only, to: 1 density test per 215 meters per width of 7.5 meters only if the current method of placement, conditions, and materials all remain the same. If a single failing test is recorded more frequent tests will be performed and the minimum will be revised back to the normal policy.

REASON: This project involves 4 kilometers of placement of Aggregate Base. The material being supplied is 22 AA (100% limestone) from the same certified source and has not materially changed. The method of placement and handling is established and is producing passing tests. All tests recorded in the last 1 kilometer section have passed. The material and methods are expected to remain the same and passing tests are also expected.

P.E.

Signature - Project/Resident Engineer

cc: Region Materials Supervisor
Resident Engineer (for local agency projects only)
Associate Region Engineer or TSC Manager

DISPOSITION OF MATERIALS BASED ON LABORATORY TEST RESULTS

1. Scope

Disposition of materials subjected to laboratory testing is based, in part, on the results of laboratory tests. Technical and engineering judgement of the Materials and Technology and project staff must be applied when reviewing the ramifications of specific test results. While it is beyond the scope of this discussion to consider every material and circumstance which may be encountered, the following illustrates the decision-making process applied when determining the disposition of materials failing to meet all specifications.

2. Disposition of Non-Specification Materials

2.1 Disposition is based on several factors, including the type of sample, type of material, parameter being measured, magnitude of the failure and performance record of a particular supplier.

2.2 Type of sample considers the intended use of information gained through laboratory testing.

2.2.1 Acceptance samples represent specific shipments of material to be incorporated into a specific project or maintenance and warehouse material covered by a purchase order. The results of laboratory tests on acceptance samples are used to accept, recommend for use or reject material. This determination is required before any material incorporated into the project may be paid for by the Project Engineer. Acceptance sample IDs must include a project control section number and a job number or purchase order number to which test results will be reported.

2.2.2 Tested stock samples represent a portion of a supplier's inventory which has been set aside for use on state- and federally-funded projects (see Section F4). Test reports issued for these samples are referenced by the supplier each time material from the Tested Stock inventory is shipped to a project. The results of laboratory tests on Tested Stock samples are used to either accept or reject materials intended for use on MDOT projects.

2.2.3 Certification verification samples are quality assurance samples for material accepted on the basis of the manufacturer's certification (see Section C). Except in the case of a critical failure when it is imperative incorporation of material from an approved certifier be prevented, the results of laboratory testing of these samples are not used to accept or reject material. Instead the results are used to verify material accepted on the basis of the manufacturer's certification does, in fact, meet all required specifications.

2.2.4 Other samples may be tested for information in the course of material research or investigation. Aggregate source, qualified product samples and concrete cores used to verify pavement thickness and depth of steel are included in this category. The results of these laboratory tests may be used to determine the acceptability of new materials for use on future projects or the need to take corrective action on an existing project.

2.3 Type of material considers the criticality of the material being tested based on the degree to which it affects the safety, performance and durability of the final product. If the result of immediate or accelerated failure of the material will be catastrophic, possibly resulting in severe injury or loss of life, or if this failure of the material may result in excessive cost for repair or replacement, the material will be considered critical for the purposes of determining its disposition. Consider the following examples of critical versus non-critical materials: guardrail beam versus ROW fence posts and reinforcing steel versus silt fence.

NOTE: All structural members are considered critical when determining their disposition based on the results of laboratory testing.

2.4 Failure mode considers which aspect of the specification the material fails to meet. When deciding the disposition of material the question is asked: Will the fact the material does not meet a specification requirement result in a lessening of the integrity or service life of the material? Consider the following example of critical parameters affecting the integrity or service life versus those which are considered non-critical or contractual parameters: tensile strength (integrity) versus coating thickness (service life) versus bar markings (non-critical or contractual) for epoxy coated rebar.

2.5 Magnitude of the failure must be considered in conjunction with the type of sample, material tested and the failure mode. Testing history, frequency of sampling and project-specific constraints may all come into play when determining the acceptable magnitude of deviation from specifications. Consider the following example of a 2% deviation from specification for different types of materials and failure mode: 2% over specification on socket depth on a PVC conduit coupling from a supplier with a history of providing specification materials (acceptable, non-critical material with neither integrity nor service life adversely affected, and a proven performance record) versus 2% deviation from specification on tensile strength and under specification on zinc coating for a 75 mm anchor bolt (unacceptable, critical material with both integrity and service life adversely affected).

2.6 Further investigation may be necessary once the test results are reviewed. The material may be re-sampled if allowed by applicable specifications. The circumstances affecting and affected by the acceptance or rejection of the material will be investigated. This may involve consultation with Construction Division, Design Division, Maintenance Division, Traffic and Safety Division and the District Field Engineering staff, including the Project Engineer. All findings of this investigation will be reviewed by the Laboratory Supervisor and Supervising Engineer before the final disposition is recommended. There are cases when the judgement and experience of the person responsible for the work into which the material is to be incorporated must be depended upon to decide if the job conditions warrant the use of the material and whether or not any use limitations or pay adjustments will be imposed. If an agreement cannot be reached because of non-engineering ramifications, this person will be called upon to accept or reject the materials in question.

3. Notification

3.1 Notification of the appropriate person(s) will be the responsibility of the Laboratory Supervisor or Supervising Engineer whenever the results of a test are critical to the integrity or progress of a project.

4. Test Reports

4.1 Test reports will reflect the results of all specification parameters tested, the results of additional investigation conducted and the recommended disposition of the material. Remarks included on test reports will state either, "The sample(s) tested meets tested specification requirements," or "The sample(s) tested does not meet tested specification requirements". Additional remarks will be included, depending upon the type of sample and the final disposition of the material. Test reports may not have more than one statement regarding the disposition of the materials tested. Results for more than one specimen or sample may be issued on the same test report, provided they meet all specifications or the material is recommended for use. Whenever possible, all samples covered by a single test report will have consecutive lab numbers.

If the determination is made, based upon the results of the original sample, to re-sample the material the remarks on the original sample test report will state the materials was re-sampled. The original sample report will be cross-referenced in the remarks on the re-sample report. The re-sample report will indicate the final disposition of the material.

Any report which must be re-issued due to an error or omission on the original report will include, under "Remarks", the statement, "This report supersedes Report Number _____ dated month/day/year due to _____".

4.2 Acceptance sample test reports must show the project control section number and job number or a purchase order number. If all specifications are met, the remarks will state, "Sample tested meets specifications". If the material does not meet specifications there will be a statement explaining which parameters were not met. When the decision is made, based on sound technical and engineering judgements, to use non-specification materials the contacts made and circumstances considered in reaching this decision will be noted briefly under "Remarks". The additional remark "Recommended for use" will be included.

4.3 Tested Stock test reports will have the words "Tested Stock" in the control section block. Tested Stock samples must meet all critical specification parameters in order for the material represented by the sample to be accepted for use. If these specifications are met the report is issued with the additional remark "Material is approved for use as Tested Stock". Supplier information and the quantity of material represented by the sample must be shown on all Tested Stock test reports.

4.4 Certification verification test reports will have the words "Certification Verification" in the control section block. Certification verification samples are not used to accept or reject material and therefore will only state whether the material did or did not meet specifications. Manufacturer and supplier information must be shown on all certification verification test reports. If the material was sampled from a project location the control section number and job number must be shown under "Remarks".

4.5 Warehouse items tested by M&T must show the purchase order number in the control section block. If all specifications are met there will be a statement under "Remarks" indicating "Sample tested meets specifications". If the material does not meet specifications there will be a statement under "Remarks" explaining which parameters were not met.

NOTE: Warehouse items tested by M&T must meet all specifications. As directed by the Purchasing and Payables Section of the Financial Operations Division, there are to be NO EXCEPTIONS made to this requirement.

4.6 Other types of samples must indicate their intended purpose such as "Technical Investigation", "Qualified Product" or "Tested for Information" in the control section block or under "Remarks".